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WINTER FOOD OF RUFFED GROUSE IN NEW YORK

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The hardest time of the year for any sedentary game bird is the winter season. Not only does the bird then face the rigors of cold weather, but at that time its supply of natural food is at the minimum. Its food habits, therefore, usually vary somewhat after the fall season. In the interest of the preservation and increase of such birds, the food requirements of the species during this period are worthy of consideration.

Previous food examinations of the ruffed grouse (Bonasa umbellus) have showed items that are scarce late in winter, as they have been chiefly of birds killed in the fall hunting season. In the accompanying tabulation (p.2) is presented an analysis of the principal food items identified in 80 stomachs and crops of ruffed grouse collected in various parts of New York State in winter months and submitted to the Bureau of Biological Survey by the Conservation Department of the State of New York. A previous Biological Survey leaflet containing similar information for the general northeastern range of the bird (Bi-1297), Winter Food of the Ruffed Grouse in the Northeast, was issued in October 1933.

The miscellaneous items here grouped as leaves, as twigs, and as fruits, seeds, and flowers include a large number of foods, most of which average less than 1 percent of the total for the 4 months. Those that are possibly of more value are as follows:

Miscellaneous leaves.--Rosaceae, chickweed (Alsine sp.), field sorrel (Rumex acetosella), Christmas fern (Polystichum acrostichoides), spruce (Picea sp.), clover (Trifolium spp.), American larch (Larix laricina), common wood-sorrel (Oxalis acetosella), hawkweed (Hieracium sp.), mountain-laurel (Kalmia latifolia), lambkill (Kalmia angustifolia), fringed polygala (Polygala paucifolia), swamp dewberry (Rubus hispidus), hepatica (Hepatica spp.), pussytoes (Antennaria spp.), speedwell (Veronica spp.), and saxifrage (Saxifragaceae).

Miscellaneous twigs.--Blueberry (Vaccinium spp.), maple (Acer spp.), birch (Betula spp.), mountain-ash (Sorbus spp.), and hazelnut (Corylus

Items identified in the winter food of ruffed grouse in New York State, with proportion [1] of each constituent by bulk, based on a study of contents of 80 stomachs and crops

Food items	December	January	February	March	Total
	Number	Number	Number	Number	Number
Stomachs examined	15	30	22	13	80
	Percent	Percent	Percent	Percent	Percent
American hornbeam (Carpinus caroliniana) (chiefly twigs, buds, and catkins).	8.73	3.06	4.54	.....	4.08
Apple (Malus spp.) (chiefly twigs and buds).	8.63	(2)	9.04	6.30	5.99
Cherry (Prunus spp.) (chiefly twigs and buds).	4.53	9.59	10.22	11.14	8.87
Aspen, cottonwood (Populus spp.)(chiefly twigs and buds).	7.66	6.40	5.81	29.99	12.46
Birch (Betula spp.) (chiefly twigs and buds).	5.06	5.46	21.78	16.74	12.26
American hophornbeam (Ostrya virginiana) (chiefly twigs and buds).	11.93	34.79	3.00	9.23	14.73
Pyrola (Pyrola spp.) (leaves)	(2)	.96	6.04	.....	1.75
Dogwood (Cornus spp.) (fruits and nutlets).	1.86	3.06	.45	.....	1.34
Sumac (Rhus spp.) (fruits and nutlets)	3.99	.13	2.59	5.99	3.17
Strawberry (Fragaria spp.) (leaves)	4.45	2.13	.40	2.91	2.47
Wintergreen (Gaultheria procumbens) (leaves and fruits).	.73	2.60	2.40	5.23	2.74
Barren-strawberry(Waldsteinia fragarioides) (leaves).	.46	1.96	3.00	.....	1.35
Woodfern (Dryopteris spp.) (fronds)	6.60	3.43	3.50	1.53	3.76
Miscellaneous leaves	13.29	11.56	12.37	6.28	10.87
Twigs, fruits, seeds, and flowers	22.08	14.87	14.86	4.66	14.16
Gravel [1]	8.80	9.80	6.18	4.76	7.85

[1] Percentages of food items on basis of total food content; gravel percentage on basis of total content.

[2] Trace.

Miscellaneous fruits, seeds, and flowers.--Rose (Rosa spp.), hawthorn (Crataegus spp.), two-leaved Solomonseal (Unifolium canadense), partridgeberry (Mitchella repens), avens (Geum sp.), common juniper (Juniperus communis), oak (Quercus spp.), greenbier (Smilax spp.), sedge (Carex spp.), grape (Vitis spp.), witch hazel (Hamamelis virginiana) (with dried flowers), and white pine (Pinus strobus).

Animal matter comprised but a trace of the contents of the January, and March stomachs and there was none in the February sto did occur consisted of fragments of firefly (Lucidota corru (Acrididae), robber fly (Asilidae), dung-beetle (Aphodius s

a bug (Drymus crassus), spiders (Arachnida), assassin bug (Zelus sp.), and ichneumon fly (Melanichneumon sp.).

Special attention is called to the possible value of the barren-strawberry (Waldsteinia fragarioides) and the fringed polygala (Polygala paucifolia), which may have been misidentified in previous reports. The former comprised 59 percent of the contents of one stomach and the latter 17 percent of another.

The poisonous mountain-laurel (Kalmia latifolia) was found in 5 stomachs, comprising 58, 26, 14, 9, and 6 percent, respectively; lambkill (K. angustifolia), also poisonous, was found in 2 stomachs, comprising 20 and 6 percent, respectively. These plants apparently are not poisonous to grouse. Whether the flesh of grouse that have eaten them is poisonous to human beings has yet to be definitely determined.

The winter food of the ruffed grouse shows a definite increase in consumption of twigs, buds, and catkins, both as the season advances and over the preceding season. Yet the bird seems to prefer, if it does not absolutely require, a greater variety than this in its vegetable food. A crop may contain a large number of twigs, leaves, or fruits of but 1 or 2 kinds, but this shows only what was taken at the last meal. The gizzard, which may contain remains of previous meals, will usually show several kinds of food.

The ruffed grouse seems to want at all seasons a certain quantity of fresh juicy, or green vegetable matter. Comparatively few fruits are left in winter, and these are shriveled or of a drier type, such as the rose. Therefore, the bird likes any of the above-mentioned leaves that can be found in a green living condition.

Furthermore a well-filled stomach usually contains two or more kinds of twigs, buds, and catkins. Unless unusually abundant, or pressed by abnormal circumstances, therefore, the grouse will not feed to a damaging extent on any one species of tree or shrub.

In behalf of the ruffed grouse, which is considered the most important upland game bird of the Northeastern States, many people often wish to know whether certain areas present a good environment, or how the environment may be improved for these birds. In judging such areas it is important to know whether suitable grouse foods will be available there during the critical winter season. For such purpose, the above information should be useful in field work, since the grouse foods listed are as important for other Northeastern States as for New York.